

SEQUENCE LISTING

IAP13 Rec'd PCT/PTO 09 DEC 2005

<110> Segura, Dorotea
Mygind, Per
Hoegenhaug, Hans-Henrik
Hoegenhaug, Hans-Henrik
Tossi, Alessandro

<120> Antimicrobial Peptides

<130> 10328.204-US

<160> 75

<170> PatentIn version 3.3

<210> 1
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = leucine or arginine

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = leucine, isoleucine, valine or phenylalanine

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = arginine or lysine

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = leucine, isoleucine, valine or phenylalanine

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = arginine, tryptophane or glycine

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = lysine, arginine, glycine, methionine, asparagine or glutamic acid

<220>

BEST AVAILABLE COPY

<221> MISC_FEATURE
 <222> (11)..(11)
 <223> Xaa = glycine, lysine, arginine or glutamic acid

<220>
 <221> MISC_FEATURE
 <222> (12)..(12)
 <223> Xaa = lysine, arginine, glycine or glutamic acid

<220>
 <221> MISC_FEATURE
 <222> (14)..(14)
 <223> Xaa = leucine or phenylalanine

<220>
 <221> MISC_FEATURE
 <222> (15)..(15)
 <223> Xaa = lysine or arginine

<220>
 <221> MISC_FEATURE
 <222> (17)..(17)
 <223> Xaa = leucine, isoleucine, phenylalanine, cysteine or tyrosine

<220>
 <221> MISC_FEATURE
 <222> (18)..(18)
 <223> Xaa = glycine, alanine or threonine

<220>
 <221> MISC_FEATURE
 <222> (19)..(19)
 <223> Xaa = glutamine, arginine, leucine or proline

<220>
 <221> MISC_FEATURE
 <222> (20)..(20)
 <223> Xaa = lysine, leucine, isoleucine, methionine or valine

<220>
 <221> MISC_FEATURE
 <222> (23)..(23)
 <223> Xaa = proline, alanine, histidine, asparagine or aspartic acid

<220>
 <221> MISC_FEATURE
 <222> (24)..(24)
 <223> Xaa = isoleucine or leucine

<220>
 <221> MISC_FEATURE
 <222> (25)..(25)
 <223> Xaa = arginine, histidine, glutamine or proline

<220>
 <221> MISC_FEATURE
 <222> (26)..(26)

<223> Xaa = isoleucine or lysine

<400> 1

Gly	Xaa	Xaa	Xaa	Arg	Xaa	Xaa	Xaa	Lys	Ile	Xaa	Xaa	Lys	Xaa	Xaa	Lys
1				5					10					15	

Xaa	Xaa	Xaa	Xaa	Ile	Lys	Xaa	Xaa	Xaa	Xaa	Leu	Val	Pro
				20				25				

<210> 2

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> Xaa = leucine or arginine

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> Xaa = leucine, isoleucine, valine or phenylalanine

<220>

<221> MISC_FEATURE

<222> (4)..(4)

<223> Xaa = arginine or lysine

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> Xaa = leucine, isoleucine, valine or phenylalanine

<220>

<221> MISC_FEATURE

<222> (7)..(7)

<223> Xaa = arginine, tryptophane or glycine

<220>

<221> MISC_FEATURE

<222> (8)..(8)

<223> Xaa = lysine, arginine, glycine, methionine, asparagine or glutamic acid

<220>

<221> MISC_FEATURE

<222> (11)..(11)

<223> Xaa = glycine, lysine, arginine or glutamic acid

```

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = lysine, arginine, glycine or glutamic acid

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa = leucine or phenylalanine

<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> Xaa = isoleucine, phenylalanine, cysteine or tyrosine

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = glutamine, leucine or proline

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa = lysine, leucine, isoleucine, methionine or valine

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa = proline, alanine, histidine, asparagine or aspartic acid

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa = isoleucine or leucine

<220>
<221> MISC_FEATURE
<222> (25)..(25)
<223> Xaa = arginine, histidine, glutamine or proline

<220>
<221> MISC_FEATURE
<222> (26)..(26)
<223> Xaa = isoleucine or lysine

<400> 2

```

```

Gly Xaa Xaa Xaa Arg Xaa Xaa Xaa Lys Ile Xaa Xaa Lys Xaa Lys Lys
1          5          10          15

```

```

Xaa Gly Xaa Xaa Ile Lys Xaa Xaa Xaa Xaa Leu Val Pro
          20          25

```

```

<210> 3
<211> 29

```

<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide (Cat1)

<400> 3

Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Pro Ile Arg Ile Leu Val Pro
20 25

<210> 4
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 4

Gly Leu Leu Arg Arg Leu Arg Gly Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Ala Ile Arg Lys Leu Val Pro
20 25

<210> 5
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 5

Gly Leu Leu Arg Arg Phe Arg Lys Lys Ile Gly Gly Lys Leu Lys Lys
1 5 10 15

Tyr Gly Gln Ile Ile Lys His Leu Arg Ile Leu Val Pro
20 25

<210> 6
<211> 29
<212> PRT
<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 6

Gly Leu Leu Arg Arg Leu Arg Arg Lys Ile Gly Gly Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Pro Leu Arg Lys Leu Val Pro
20 25

<210> 7

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 7

Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 8

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 8

Gly Leu Leu Lys Arg Leu Gly Arg Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Ala Ile Arg Lys Leu Val Pro
20 25

<210> 9

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 9

Gly Arg Phe Lys Arg Phe Trp Lys Lys Ile Gly Arg Lys Phe Lys Lys
1 5 10 15

Ile Gly Gln Met Leu Lys Pro Ile Arg Ile Leu Val Pro
20 25

<210> 10

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 10

Gly Leu Leu Lys Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Pro Lys Ile Lys His Ile Arg Lys Leu Val Pro
20 25

<210> 11

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 11

Gly Leu Leu Arg Arg Phe Trp Met Lys Ile Gly Gly Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Met Ile Lys His Leu Arg Lys Leu Val Pro
20 25

<210> 12

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 12

Gly Arg Leu Arg Arg Leu Arg Arg Lys Ile Gly Glu Lys Leu Lys Lys

1 5 10 15

Phe Gly Gln Val Ile Lys Ala Leu Arg Ile Leu Val Pro
20 25

<210> 13
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 13

Gly Leu Leu Arg Arg Leu Trp Arg Lys Ile Gly Arg Lys Leu Lys Lys
1 5 10 15

Tyr Gly Gln Lys Ile Lys Ala Leu Arg Lys Leu Val Pro
20 25

<210> 14
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 14

Gly Arg Phe Arg Arg Phe Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Leu Val Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 15
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 15

Gly Leu Leu Arg Arg Leu Arg Arg Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 16
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 16

Gly Leu Leu Arg Arg Leu Arg Asn Lys Ile Arg Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Ala Ile Arg Ile Leu Val Pro
20 25

<210> 17
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 17

Gly Arg Leu Arg Arg Leu Trp Arg Lys Ile Gly Arg Lys Leu Lys Lys
1 5 10 15

Tyr Gly Gln Val Ile Lys His Leu Arg Ile Leu Val Pro
20 25

<210> 18
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 18

Gly Leu Phe Lys Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Pro Leu Arg Lys Leu Val Pro
20 25

<210> 19
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 19

Gly Leu Leu Arg Arg Phe Gly Arg Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Phe Gly Pro Lys Ile Lys His Leu Arg Lys Leu Val Pro
20 25

<210> 20
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 20

Gly Leu Phe Arg Arg Phe Arg Arg Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Pro Leu Arg Lys Leu Val Pro
20 25

<210> 21
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 21

Gly Leu Leu Arg Arg Phe Arg Arg Lys Ile Gly Arg Lys Leu Lys Lys
1 5 10 15

Tyr Gly Leu Met Ile Lys Pro Leu Arg Lys Leu Val Pro
20 25

<210> 22
<211> 29

<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 22

Gly Leu Leu Lys Arg Phe Arg Gly Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Tyr Gly Gln Leu Ile Lys Ala Ile Arg Ile Leu Val Pro
20 25

<210> 23
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 23

Gly Leu Phe Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Leu Ile Lys Ala Ile Arg Ile Leu Val Pro
20 25

<210> 24
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 24

Gly Leu Leu Arg Arg Phe Gly Lys Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Tyr Gly Gln Lys Ile Lys Asn Leu Arg Ile Leu Val Pro
20 25

<210> 25
<211> 29
<212> PRT
<213> Artificial

<220>
 <223> Synthetic antimicrobial peptide
 <400> 25
 Gly Leu Leu Lys Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
 1 5 10 15
 Ile Gly Gln Lys Ile Lys Pro Ile Arg Lys Leu Val Pro
 20 25
 <210> 26
 <211> 29
 <212> PRT
 <213> Artificial
 <220>
 <223> Synthetic antimicrobial peptide
 <400> 26
 Gly Leu Leu Arg Arg Phe Gly Arg Lys Ile Gly Lys Lys Phe Lys Lys
 1 5 10 15
 Phe Gly Pro Lys Ile Lys His Leu Arg Lys Leu Val Pro
 20 25
 <210> 27
 <211> 29
 <212> PRT
 <213> Artificial
 <220>
 <223> Synthetic antimicrobial peptide
 <400> 27
 Gly Arg Leu Arg Arg Leu Arg Arg Lys Ile Arg Lys Lys Leu Lys Lys
 1 5 10 15
 Tyr Gly Gln Lys Ile Lys Ala Ile Arg Lys Leu Val Pro
 20 25
 <210> 28
 <211> 29
 <212> PRT
 <213> Artificial
 <220>
 <223> Synthetic antimicrobial peptide

<400> 28

Gly Arg Phe Arg Arg Phe Arg Lys Lys Ile Gly Gly Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Val Ile Lys Asp Ile Arg Ile Leu Val Pro
20 25

<210> 29

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 29

Gly Arg Phe Arg Arg Phe Arg Lys Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Phe Gly Gln Met Ile Lys Ala Leu Arg Ile Leu Val Pro
20 25

<210> 30

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 30

Gly Arg Leu Arg Arg Phe Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Met Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 31

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 31

Gly Leu Val Arg Arg Phe Arg Arg Lys Ile Gly Lys Lys Leu Lys Lys

1 5 10 15

Ile Gly Gln Ile Ile Lys Ala Ile Arg Lys Leu Val Pro
20 25

<210> 32
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 32

Gly Leu Leu Arg Arg Leu Arg Arg Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Ile Gly Gln Val Ile Lys His Leu Arg Lys Leu Val Pro
20 25

<210> 33
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 33

Gly Leu Phe Arg Arg Leu Arg Gly Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Ala Ile Arg Ile Leu Val Pro
20 25

<210> 34
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 34

Gly Leu Phe Arg Arg Leu Gly Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Val Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 35
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 35

Gly Leu Leu Arg Arg Leu Gly Lys Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Phe Gly Gln Val Ile Lys Ala Leu Arg Ile Leu Val Pro
20 25

<210> 36
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 36

Gly Leu Phe Arg Arg Leu Gly Arg Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Val Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 37
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 37

Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Glu Lys Lys Leu Lys Lys
1 5 10 15

Tyr Gly Pro Lys Ile Lys Ala Leu Arg Lys Leu Val Pro
20 25

<210> 38
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 38

Gly Arg Ile Lys Arg Val Gly Glu Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Val Ile Lys His Leu Arg Ile Leu Val Pro
20 25

<210> 39
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 39

Gly Leu Phe Arg Arg Phe Gly Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Val Ile Lys Ala Leu Arg Ile Leu Val Pro
20 25

<210> 40
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 40

Gly Arg Leu Arg Arg Phe Gly Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Leu Ile Lys Ala Leu Arg Ile Leu Val Pro
20 25

<210> 41
<211> 29

<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 41

Gly Leu Leu Arg Arg Phe Trp Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Pro Leu Pro Lys Leu Val Pro
20 25

<210> 42
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 42

Gly Arg Phe Arg Arg Leu Gly Arg Lys Ile Gly Glu Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Val Ile Lys Ala Ile Arg Ile Leu Val Pro
20 25

<210> 43
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 43

Gly Leu Phe Arg Arg Phe Gly Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Pro Ile His Lys Leu Val Pro
20 25

<210> 44
<211> 29
<212> PRT
<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 44

Gly Leu Leu Lys Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Met Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 45

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 45

Gly Leu Leu Arg Arg Phe Arg Glu Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Tyr Gly Gln Lys Ile Lys His Leu Arg Lys Leu Val Pro
20 25

<210> 46

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 46

Gly Leu Phe Arg Arg Leu Arg Arg Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Pro Leu Arg Lys Leu Val Pro
20 25

<210> 47

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 47

Gly Leu Phe Arg Arg Phe Trp Lys Lys Ile Gly Arg Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Pro Leu Gln Ile Leu Val Pro
20 25

<210> 48

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 48

Gly Leu Leu Arg Arg Leu Trp Lys Lys Ile Gly Arg Lys Phe Lys Lys
1 5 10 15

Tyr Gly Gln Val Ile Lys His Ile Arg Lys Leu Val Pro
20 25

<210> 49

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 49

Gly Leu Leu Arg Arg Leu Gly Arg Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Ala Ile Arg Ile Leu Val Pro
20 25

<210> 50

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic antimicrobial peptide

<400> 50

Gly Leu Leu Arg Arg Phe Arg Asn Lys Ile Gly Lys Lys Leu Lys Lys

1 5 10 15

Ile Gly Gln Lys Ile Lys Pro Ile Arg Lys Leu Val Pro
20 25

<210> 51
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 51

Gly Arg Phe Lys Arg Leu Arg Lys Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Asp Ile Arg Lys Leu Val Pro
20 25

<210> 52
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 52

Gly Leu Phe Arg Arg Ile Arg Arg Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Phe Gly Gln Val Ile Lys Pro Leu Arg Lys Leu Val Pro
20 25

<210> 53
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 53

Gly Arg Leu Arg Arg Leu Gly Lys Lys Ile Gly Glu Lys Leu Lys Lys
1 5 10 15

Phe Gly Gln Met Ile Lys His Ile Arg Ile Leu Val Pro
20 25

<210> 54
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 54

Gly Leu Leu Arg Arg Leu Gly Lys Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Cys Gly Gln Val Ile Lys Ala Ile Arg Ile Leu Val Pro
20 25

<210> 55
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 55

Gly Leu Leu Arg Arg Phe Arg Lys Lys Ile Gly Glu Lys Phe Lys Lys
1 5 10 15

Phe Gly Gln Lys Ile Lys Asn Ile Arg Ile Leu Val Pro
20 25

<210> 56
<211> 29
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 56

Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Pro Ile Arg Lys Leu Val Pro
20 25

<210> 57
 <211> 29
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic antimicrobial peptide

<400> 57

Gly	Leu	Leu	Arg	Arg	Phe	Arg	Lys	Lys	Ile	Gly	Lys	Lys	Leu	Lys	Lys
1				5					10					15	

Tyr	Gly	Gln	Lys	Ile	Lys	His	Leu	Arg	Ile	Leu	Val	Pro
			20					25				

<210> 58
 <211> 19
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic antimicrobial peptide

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = leucine or arginine

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> Xaa = leucine or phenylalanine

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> Xaa = arginine or lysine

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> Xaa = leucine or phenylalanine

<220>
 <221> MISC_FEATURE
 <222> (7)..(7)
 <223> Xaa = arginine, lysine or glycine

<220>
 <221> MISC_FEATURE
 <222> (8)..(8)
 <223> Xaa = arginine, lysine or glutamic acid

<220>
 <221> MISC_FEATURE
 <222> (11)..(11)
 <223> Xaa = glycine or lysine

<220>
 <221> MISC_FEATURE
 <222> (12)..(12)
 <223> Xaa = lysine, arginine or glutamic acid

<220>
 <221> MISC_FEATURE
 <222> (14)..(14)
 <223> Xaa = leucine or phenylalanine

<220>
 <221> MISC_FEATURE
 <222> (15)..(15)
 <223> Xaa = lysine or arginine

<220>
 <221> MISC_FEATURE
 <222> (17)..(17)
 <223> Xaa = isoleucine or leucine

<220>
 <221> MISC_FEATURE
 <222> (18)..(18)
 <223> Xaa = alanine or threonine

<400> 58

Gly	Xaa	Xaa	Xaa	Arg	Xaa	Xaa	Xaa	Lys	Ile	Xaa	Xaa	Lys	Xaa	Xaa	Lys
1				5					10					15	

Xaa Xaa Arg

<210> 59
 <211> 19
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic antimicrobial peptide

<400> 59

Gly	Leu	Leu	Arg	Arg	Leu	Arg	Lys	Lys	Ile	Gly	Lys	Lys	Leu	Lys	Lys
1				5					10					15	

Ile Ala Arg

<210> 60
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 60

Gly Leu Phe Arg Arg Leu Lys Arg Lys Ile Gly Arg Lys Phe Lys Lys
1 5 10 15

Ile Ala Arg

<210> 61
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 61

Gly Leu Leu Lys Arg Leu Gly Arg Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Ile Ala Arg

<210> 62
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 62

Gly Leu Leu Arg Arg Phe Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Ala Arg

<210> 63

<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 63

Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Thr Arg

<210> 64
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 64

Gly Leu Phe Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Ala Arg

<210> 65
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 65

Gly Leu Phe Arg Arg Leu Lys Arg Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Ala Arg

<210> 66
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 66

Gly Leu Leu Lys Arg Leu Gly Arg Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Ala Arg

<210> 67
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 67

Gly Leu Leu Arg Arg Phe Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Thr Arg

<210> 68
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 68

Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Gly Arg Lys Phe Lys Lys
1 5 10 15

Ile Ala Arg

<210> 69
<211> 19
<212> PRT
<213> Artificial

<220>
<223> Synthetic antimicrobial peptide

<400> 69

Gly Leu Phe Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Phe Lys Lys
1 5 10 15

Ile Ala Arg

<210> 70

<211> 90

<212> DNA

<213> Artificial

<220>

<223> Synthetic Cat1 gene

<220>

<221> CDS

<222> (1)..(90)

<400> 70

ggc ctg ctg cgc cgt ctg cgc aag aag att ggc aaa aag ctg aag aaa 48
Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

att ggc cag aag att aaa ccg att cgc att ctg gtg ccg tag 90
Ile Gly Gln Lys Ile Lys Pro Ile Arg Ile Leu Val Pro
20 25

<210> 71

<211> 29

<212> PRT

<213> Artificial

<220>

<223> Synthetic Construct

<400> 71

Gly Leu Leu Arg Arg Leu Arg Lys Lys Ile Gly Lys Lys Leu Lys Lys
1 5 10 15

Ile Gly Gln Lys Ile Lys Pro Ile Arg Ile Leu Val Pro
20 25

<210> 72

<211> 129

<212> DNA

<213> Artificial

<220>
 <223> Primer 1 sequence

<400> 72
 attattcaga tgctggatcc ggcggaaggc ctgctgcgcc gtctgcgcaa gaagattggc 60
 aaaaagctga agaaaattgg ccagaagatt aaaccgattc gcattctggt gccgtagctc 120
 gagattatt 129

<210> 73
 <211> 129
 <212> DNA
 <213> Artificial

<220>
 <223> Primer 2 sequence

<400> 73
 aataatctcg agctacggca ccagaatgcg aatcggttta atcttctggc caattttctt 60
 cagctttttg ccaatcttct tgcgcagacg gcgcagcagg ccttccgccg gatccagcat 120
 ctgaataat 129

<210> 74
 <211> 20
 <212> DNA
 <213> Artificial

<220>
 <223> Primer 3 sequence

<400> 74
 tgctagttat tgctcagcgg 20

<210> 75
 <211> 19
 <212> DNA
 <213> Artificial

<220>
 <223> Primer 4 sequence

<400> 75
 accgtagttg cgcccatcg 19

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☒ **FADED TEXT OR DRAWING**
- ☒ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☒ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.